From: FEMA-NRCC-ohul <FEMA-NRCC-ohul@fema.dhs.gov>
Sent: Wednesday, August 30, 2017 1:48 PM
To: Mason, Steve
Subject: FW: Wastewater Considerations
Attachments: Wastewater Considerations_KS_Harvey_CIP_08302017_V3.docx; Water&Wastewater LL Slide.pptx

FYSA for your water people

From: FEMA-NRCC-lla
Sent: Wednesday, August 30, 2017 12:57 PM
To: FEMA-NRCC-ohul
Subject: Wastewater Considerations

ESF 10,

Please find attached a FEMA analysis and summary slide of after-action reports involving Water and Wastewater Facilities. The analysis covers specific issues and recommendations from Hurricane Sandy lessons learned, which may be helpful to inform response and recovery efforts and coordination for the affected area in Texas and Louisiana.

Please let me know if there are any questions.

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Continuous Improvement Coordinator
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NRCC

Topic: Water and Wastewater Facilities

The following Water and Wastewater issues and recommendations are documented in after-action reports and other documents following Hurricane Sandy. These lessons, as well as a list of mitigation measures to consider during the recovery process, may be useful as response and recovery officials conduct safety and damage assessments of water and wastewater facilities in the affected area.

Wastewater Infrastructure Monitoring and Operational Coordination

- Water/Wastewater Agency Response Network Sandy AAR
  The Water/Wastewater Agency Response Network (WARN) is a network of utilities that aid other utilities to respond to and recover from emergencies.
  - Issue*:* Loss of power was the single greatest factor affecting water sector operations. Many requests for generator and/or fuel support were either denied or not rated high priority, thus creating significant risk of cascading impacts.
    - Recommendation: Water sector requests for generator and fuel support should be shared with the WARN and ESF 3 in the EOC.
  - Issue: Inconsistent coordination, documentation land reporting of water sector issues at all levels.
    - Recommendation: State and local EOCs should include representation (physical or virtual) from a member of WARN.
  - Issue: Limited and/or delayed reporting on operational status led to misguided and/or false assumptions regarding operational integrity.
    - Recommendation: Develop consistent damage assessment and system status criteria for use at the local, state, and federal level in partnership with WARN.
  - Issue: Impaired communication systems can have operational implications at the utility level for SCADA telemetry and response crew coordination.
    - Recommendation: Maintain radio communication networks.
- NYC Sandy AAR
  - Issue: Critical Infrastructure facility owners and operators may require assistance in pumping wastewater out of many of their facilities.
    - Recommendations (for Hurricane Harvey):
      - The Army Corps of Engineers and the Navy may be able to assist in pumping operations.
      - Procure a standing list of engineering consultants to assist in disaster evaluation.
- NY Department of Health AAR
  - Issues:
    - There was an inability to obtain relevant information from the State OEM regarding wastewater releases, which may have impacted nearby drinking water intakes.
    - The Bureau of Water Supply Protection (BWSP) was unable to coordinate with the State OEM in an EPA request for deployment of a volunteer water system assessment team. New York's Water/Wastewater Agency Response Network (NYWARN), the primary volunteer mutual-aid water and waste entity in the State, had difficulty communicating requests and information to/from the State OEM.
    - Water supply operators were not allowed through police/military checkpoints to access critical equipment.
  - Recommendations (for Hurricane Harvey):
    - Survey internal Department of Health bureaus and divisions to determine the environmental factors and typical activities staff are engaged in, in order to provide enhanced information and equipment.
    - Request information from Texas Commission on Environmental Quality (TCEQ) regarding any informational materials they may have for environmental workers to integrate with environmental health inspection departments in affected cities and jurisdictions.

- Provide a checklist identifying what equipment and other resources are needed for staff customized to the location to which they are deployed.
- For the State OEMs, keep a centralized log of stockpile equipment deployed and POC information, accessible to local environmental and health departments.
- Identify a POC with Occupational Safety and Health Administration (OSHA) and other Federal partners to provide additional safety information and recommendations.
- Provide recognized credentialing to water system operators for use at police/military disaster-related checkpoints.

Wastewater Infrastructure Mitigation Measures during Recovery

- New York Sandy Recovery Office Lessons Learned – "Recovery for the Future"
  FEMA should consider the following to better align combined 404 and 406 mitigation measures at damaged facilities during the repair process:
  - Conduct a joint (FEMA, Grantee and subgrantee) coordination meeting early in the process and come to an agreement before formally submitting for funding under each program.
  - Establish clear definitions on the limitations of section 406 hazard mitigation funding measures. If PA can mitigate undamaged infrastructure on a discretionary or case-by-case basis, then the conditions and approval authority should be clearly delineated. Develop an SOW to reduce risk and then clearly delineate eligible portions by program (e.g., 406 repair, 406 mitigation and 404 mitigation).
  - Identify unfunded HMA projects at sites that were impacted by the disaster, screen preliminary HMGP applications for those related to the disaster area (typically as Letters of Interest) and coordinate with the State projects where the State and subapplicant are willing to support an integrated project. Risk assessments from FEMA-approved local hazard mitigation plans may also be a resource to help identify vulnerable critical infrastructure.
  - Conduct a vulnerability assessment of the facility versus focusing on the damages generated by the disaster (consider the DHS Integrated Rapid Visual Screening as a template). 406 mitigation is limited to the level of protection suitable for the declared event while 404 funding can provide an additional level of protection to appropriately reduce the long-term risk.
  - Identify practical mitigation measures to reduce the risks identified by the vulnerability assessment. Currently 406 mitigation measures focus on the damaged element at the eligible facility. In some cases, the most effective measure may be independent of the facility. One can elevate damaged equipment at multiple facilities, while improved drainage, for example, could allow one to reduce damage to all the flood prone facilities in the area. This is traditionally eligible under 404 but not often considered under 406.

Lessons: Water and Wastewater

New York's experiences during Sandy may be helpful in anticipating water/wastewater assessment needs.

Sandy

- Many requests for generator/and or fuel support were denied or not rated high priority, thus creating significant risk of cascading impacts
  - Best Practice: Requests should be shared with the Water/Wastewater Agency Response Network (WARN)
- Limited and/or delayed reporting on operational status led to misguided and/or false assumptions regarding operational integrity
  - Best Practice: Develop consistent damage assessment and system status criteria for use at the local, state, and federal level in partnership with WARN
- Impaired communication systems can have operational implications
  - Best Practice: Maintain radio communication networks such as 900-MHz systems
- There was an inability to obtain relevant information from State OEM regarding wastewater releases, which may have impacted nearby drinking water intakes
- The Bureau of Water Supply Protection was unable to coordinate with State OEM in an EPA request for deployment of a volunteer water system assessment team
- Water supply operators were not allowed through police/military checkpoints to access critical equipment
  - Best Practice: Provide recognized credentialing to water system operators for use at police/military checkpoints
- **Recovery Consideration**: Align 404 and 406 hazard mitigation funding measures at damaged facilities during the repair process